

WHAT IS CLAIMED IS:

- 1 1. A method for closing a left atrial appendage of a patient's heart,
2 said method comprising:
3 positioning a closure instrument through a percutaneous passage beneath
4 --the rib cage, over an epicardial surface, and adjacent to the left atrial appendage; and
5 closing the left atrial appendage using the closure instrument.
- 1 2. A method as in claim 1, wherein positioning comprises making an
2 incision between a costal cartilage and a xiphoid of the patient and placing an access
3 sheath through the incision into a pericardial space.
- 1 3. A method as in claim 2, wherein positioning further comprises
2 advancing a distal end of the closure instrument through the sheath, into the pericardial
3 space, and over an epicardial surface to an atrioventricular groove of the heart.
- 1 4. A method as in claim 3, wherein closing comprises looping,
2 suturing, stapling, clipping, riveting, clamping, or fusing the left atrial appendage at a
3 neck region thereof.
- 1 5. A method as in claim 4, wherein closing further comprises
2 grasping the left atrial appendage prior to closing the neck region thereof.
- 1 6. A method as in claim 1, wherein the method is performed while the
2 patient's heart is beating.
- 1 7. A method as in claim 6, wherein the method is performed while
2 both lungs of the patient remain inflated.
- 1 8. A method as in claim 7, wherein the method is performed while the
2 patient is under a local anesthetic.
- 1 9. An improved method for closing a left atrial appendage of a heart,
2 said method being of the type wherein a closure element is placed over an exterior of the
3 appendage while the patient's chest remains closed, wherein the improvement comprises
4 advancing the closure element from beneath the rib cage over an epicardial surface to the

5 exterior of the left atrial appendage prior to placing the closure element over the left atrial
6 appendage.

1 10. A device for closing a left atrial appendage of a heart, said device
2 comprising:
3 -- a shaft having a proximal end and a distal end, wherein the distal end is
4 adapted to percutaneously enter a pericardial space, advance over an epicardial surface,
5 and approach the exterior of the left atrial appendage; and
6 means carried by the shaft for closing the left atrial appendage when the
7 distal end of the shaft is positioned adjacent to the left atrial appendage.

1 11. A device as in claim 10, wherein the shaft has a length in the range
2 from 10 cm to 40 cm, a width in the range from 2 mm to 20 mm, and a thickness in the
3 range from 1 mm to 10 mm.

1 12. A device as in claim 10, wherein the shaft is curved over its length.

1 13. A device as in claim 12, wherein the curvature of the shaft is
2 adjustable.

1 14. A device as in claim 12, wherein the device has a crescent-shaped
2 cross-section.

1 15. A device as in claim 10, wherein the distal end is configured to lie
2 within an atrioventricular valve groove of the heart.

1 16. A device as in claim 15, wherein the shaft has at least one lumen
2 which extends from the proximal end to exit ports spaced inwardly from the distal end by
3 a distance in the range from 0.5 cm to 5 cm.

1 17. A device as in claim 16, wherein the closing means extends
2 through the at least one lumen.

18. A device as in claim 17, wherein the closing means comprises a grasping tool which extends through one of the lumens, said grasping tool being adapted to temporarily grasp the left atrial appendage.

B 1 19. A device as in claim 18, wherein the closing means further
2 comprises a closing tool adapted to permanently close the left atrial appendage while it is
3 being temporarily closed with the grasping tool.

1 20. A device as in claim 12, wherein the shaft has at least a second
2 lumen.

1 21. A device as in claim 20, further comprising a viewing scope
2 positionable through the second lumen in the shaft.

1 22. A device as in claim 10, further comprising a handle attached to the
2 proximal end of the shaft.

1 23. A device as in claim 21, wherein the shaft has at least a third lumen
2 for irrigating the pericardial space.

1 24. A device as in claim 10, further comprising an expander for
2 separating the pericardium in the region of the left atrial appendage.

1 25. A device as in claim 24, wherein the expander comprises an
2 inflatable balloon.

Q2 1 26. A kit comprising:
2 a closure device; and
3 instructions for use setting forth a method as in claim 1.

1 27. A method as in claim 1, further comprising separating the parietal
2 pericardium from the visceral pericardium near left atrial appendage prior to closing the
3 left atrial appendage to create a space over the atrial appendage.

1 28. A method as in claim 27, further comprising viewing the atrial
2 appendage through the space.

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